

A NEW SPECIES OF *DIPLOCENTRUS* PETERS FROM TEXAS (SCORPIONES, DIPLOCENTRIDAE)

Scott A. Stockwell¹

Department of Biological Sciences
Texas Tech University
Lubbock, Texas 79409

and

Jan A. Nilsson

Department of Biology
Pan American University
Edinburg, Texas 78539

ABSTRACT

Diplocentrus diablo, new species, is described from the Rio Grande Valley of Texas, U.S.A., and northern Tamaulipas, México

INTRODUCTION

The genus *Diplocentrus* is a poorly understood assemblage of meso-American scorpions, most of which are described from southern and central México. Species known to occur in the U.S.A. are *Diplocentrus spitzeri* Stahnke from Arizona (Stahnke 1970a), *Diplocentrus peloncillensis* Francke from Arizona and New Mexico (Francke 1975), and *Diplocentrus whitei* (Gervais) (= *Diplocentrus bigbendensis* Stahnke) from Texas (Ewing 1928; Gertsch 1939; Stahnke 1967). No species of *Diplocentrus* are recorded from Tamaulipas, but *D. whitei* is known to occur in Coahuila and Neuvo León, and *Diplocentrus colwelli* Sissom is found in central Neuvo León (Sissom 1986). In the present paper, we describe a new species of *Diplocentrus* from the Rio Grande Valley area of Texas, U.S.A and Tamaulipas, México.

METHODS

The measurements and terminology follow that of Stahnke (1970b), except for trichobothriotaxia, which follows that of Vachon (1974), and metasomal and pedipalpal carination, which follows that of Francke (1978). Hemispermatophores were removed and observed in 100% clove oil. All measurements and drawings were made using a Wild Model 7A® dissecting microscope equipped with an ocular micrometer and a drawing tube. Acronyms for collections from which

¹Current address: Department of Entomology, University of California, Berkeley, CA 94720.

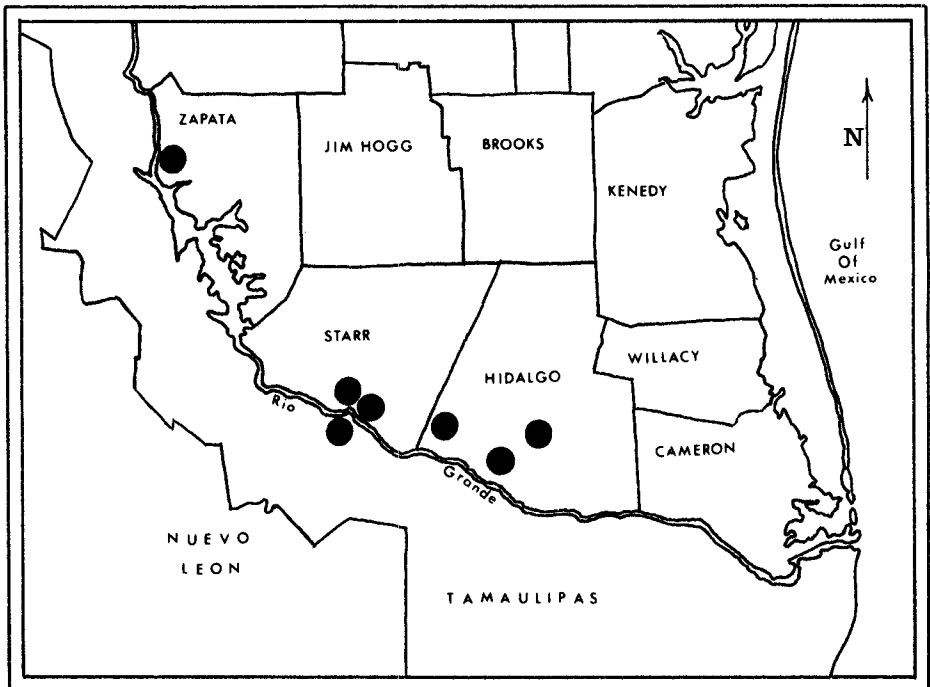


Fig. 1.—Map of the lower Rio Grande Valley showing the distribution of *Diplocentrus diablo*, new species.

specimens were examined are given in the acknowledgements. Specimens from the junior author's collection are listed "JAN."

***Diplocentrus diablo*, new species**

Figs. 1-8

Diplocentrus whitei Hoffman 1931:308-309 (in part).

Type data.—Holotype male from Santa Cruz, Starr County, Texas, 18 August 1985 (Jan A. Nilsson), deposited in the American Museum of Natural History, New York. Paratypes are listed under "Specimens Examined".

Etymology.—The specific epithet is taken from the Spanish word, *diablo*, and is inspired by the belief of the Hispanic locals that these scorpions are the consorts of evil forces. The word is used as a noun in apposition.

Distribution.—Known only from the lower Rio Grande Valley, including Hidalgo, Starr, and Zapata counties in the state of Texas, U.S.A., and the state of Tamaulipas, México (Fig. 1).

Diagnosis.—Dark scorpions, 40 to 50 mm in total length; carapace smooth to weakly, minutely granular; pectinal tooth count 12-14 in males, 9-11 in females; modal tarsomere II spine formula 4/4: 4/5: 5/6: 5/6. Males with moderate to weak reticulate costate pattern on pedipalp; female pedipalp with vestigial to obsolete reticulation. Sexes morphometrically similar (Table 1); metasomal segment I wider than long; pedipalp chela length approximately equal to twice its depth.

Table 1.—Morphometric ratios of *Diplocentrus diablo*, new species. M = male, F = female.

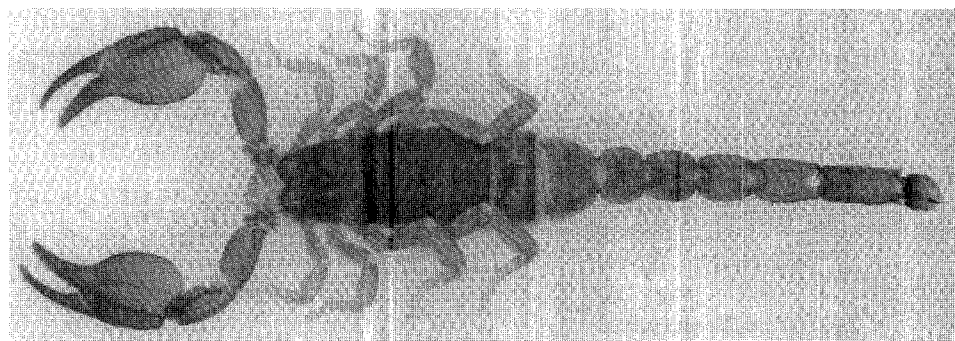
Ratio	Sex	Range	Mean	SD
Pedipalp chela length/pedipalp chela depth	M	1.86-2.00	1.92	0.060
	F	1.91-2.09	1.97	0.083
Pedipalp chela length/carapace length	M	1.65-1.67	1.66	0.009
	F	1.61-1.66	1.63	0.022
Pedipalp chela length/fixed finger length	M	2.31-2.37	2.33	0.026
	F	2.21-2.33	2.26	0.051
Carapace length/fixed finger length	M	1.39-1.43	1.40	0.019
	F	1.33-1.45	1.38	0.050
Fixed finger length/pedipalp femur length	M	0.97-0.99	0.98	0.008
	F	1.00-1.06	1.04	0.028
Fixed finger length/metasomal V length	M	0.75-0.80	0.78	0.026
	F	0.88-0.97	0.93	0.039

Description.—Males. Color brown with variable dark brown marbling (Fig. 2). Carapace smooth to weakly minutely granular; posterior width typically greater than its length; prosomal venter lustrous, weakly punctate; pectinal tooth count 12-14 (mode 13). Tergites with small to minute irregular granulation; tergite VII moderately bilobed, submedian and lateral carinae weak, with a few irregularly positioned granules. Sternites smooth, moderately punctate; sternite VII with submedian and lateral carinae weak, subcrenate.

Hemispermaphore lamelliform; lamella not noticeably elongate; external lateral margin of capsular lobe weakly dentate (Fig. 3).

Metasoma intercarinal spaces shagreened, vestigially reticulate. Dorsal lateral carinae moderate, granulose on segments I-III; moderate, vestigially granulose on IV. Lateral supramedian carinae strong to moderate, granulose on segments I-IV. Lateral inframedian and ventral lateral carinae moderate on segments I-III; weak on IV; granulose. Ventral submedian carinae moderate, granulose on I, II; weak to vestigial, subgranulose on III, IV. Metasomal segment V dorsal lateral carinae moderate, subgranulose; lateral median carinae vestigial, vestigially granulose; ventral lateral, ventral median, and ventral transverse carinae weak to moderate, moderately tuberculate; anal subterminal carina moderate, tuberculate; anal terminal carina weak, granulose. Telson smooth except for a few tubercles on the ventral anterior surface, sparsely setose.

Pedipalps not noticeably elongate, orthobothriotaxy C (Vachon 1974). Femur with internal face irregularly tuberculate; other faces weakly, minutely granular;

Fig. 2.—*Diplocentrus diablo*, adult male, dorsal aspect.

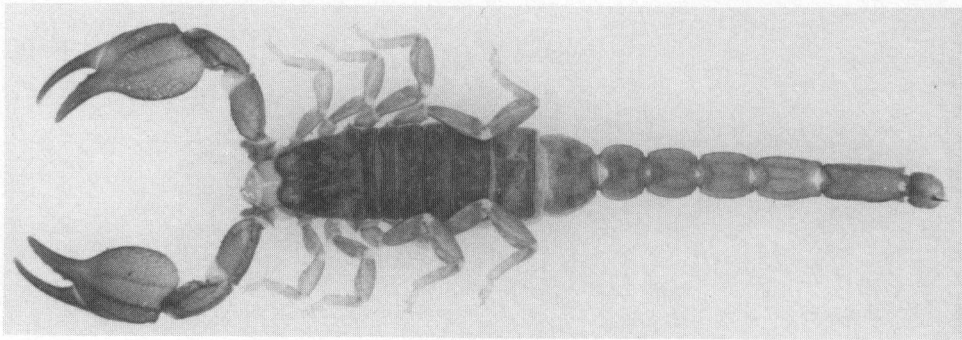
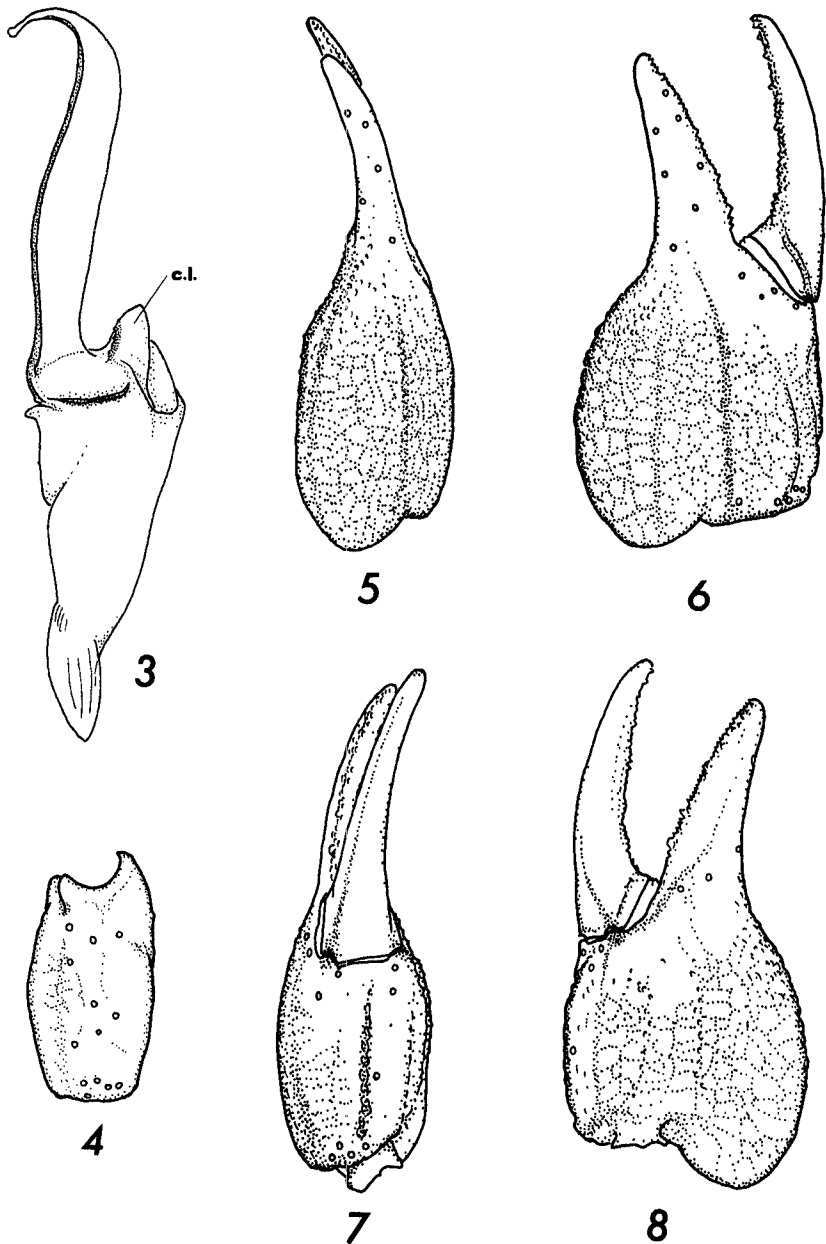


Fig. 2.—*Diplocentrus diablo*, adult male, dorsal aspect.



Figs. 3-8.—*Diplocentrus diablo*, adult male: 3, right hemispermatophore, lateral (external) aspect; 4, right pedipalp patella, external aspect showing trichobothrial pattern, c.l. = capsular lobe; 5, right pedipalp chela of adult male showing trichobothrial pattern, dorsal aspect; 6, pedipalp chela, external aspect; 7, pedipalp chela, ventral aspect; 8, pedipalp chela, internal aspect.

dorsal internal carina moderate, granulose to tuberculate; dorsal external carina moderate, tuberculate proximally to obsolete distally; ventral external carina obsolete; ventral internal carina moderate, granulose. Patella (Fig. 4) with ventral and external faces weakly reticulate; internal face irregularly granular; basal tubercle moderate, consisting of a single pointed tubercle; dorsal median carina strong, smooth; ventral external carina moderate to weak, smooth; ventral

Table 2.—Variation in tarsomere II spine counts of *Diplocentrus diablo*, new species. Missing tarsomeres are indicated in column X.

No. of spines in row	3	4	5	6	7	X
Leg I						
Prolateral row	6	27	1			2
Retrolateral row		32	2			2
Leg II						
Prolateral row		33	3			
Retrolateral row			36			
Leg III						
Prolateral row			26	7	1	2
Retrolateral row				33	1	2
Leg IV						
Prolateral row			27	6		3
Retrolateral row			5	27	1	3

internal carina weak to moderate, granulose; other carinae obsolete. Chela (Figs. 5-8) with dorsal and external faces moderately to weakly reticulate; other faces weakly to vestigially reticulate; dorsal marginal carina weak to moderate, granulose; dorsal secondary and external secondary carinae weak; digital carina moderate; ventral external carina obsolete; ventral median carina strong, crenulate; ventral internal carina vestigial; internal carinae weak, sparsely granular. Unless otherwise noted, the carinae of the chela are smooth, except where a continuation of the reticulate pattern occurs.

Legs typical, sparsely granular to smooth. Tarsomere II spine formula 4/4: 4/5: 5/6: 5/6.

Females differ from males as follows. Carapace and tergites smooth; pedipalps and metasoma without reticulate costate pattern; pectinal tooth count 9-11 (mode 10).

Morphometrics.—Sexes are morphometrically similar; carapace wider than long; pedipalp chela length approximately equal to or less than two times chela depth; pedipalp chelae of males slightly shorter and deeper than those of females; metasomal segment I wider than long; remaining segments longer than wide. The ranges, means, and standard deviations of six taxonomically important morphometric ratios from three adult males and four adult females are given in Table 1.

Variation.—Specimens varied in pectinal tooth counts as follows: in males, three combs had 12 teeth, six combs had 13 teeth, and three combs had 14 teeth; in females, four combs had nine teeth, 15 combs had 10 teeth, and seven combs had 11 teeth. Variation in tarsomere II spine counts is shown in Table 2. One female specimen had metasomal segment II wider than long.

Habitat.—The new species, like all species of *Diplocentrus*, is an obligate burrower but may be found under large surface objects in rocky areas of the Rio Grande Valley.

Comparisons.—The only known species of *Diplocentrus* that is closely related to *D. diablo* is *D. colwelli* Sissom, found in the state of Nuevo León, México. The latter is distinguished from the new species by its smaller size, slightly higher tarsomere II spine formula (5/5-6: 5/6: 6/7: 6/7), smaller pedipalp chela length/depth (males 1.78-1.88, females 1.86-1.96), and vestigially dentate external lateral margin of dorsal lobe of hemispermatophore. *Diplocentrus whitei*, the only other

species of the genus known to occur in Texas, is easily separated from the new species by its larger size, higher pectinal tooth counts (females 14-18, males 16-20), higher tarsomere II spine formula (5-6/7: 6/7-8: 7/8: 7/8), larger pedipalp length/depth (females 2.05-2.33, males 2.41-2.79), and strongly dentate external lateral margin of dorsal lobe of hemispermatophore.

Specimens examined.—All specimens designated paratypes. U.S.A.: Texas; *Zapata County*, 32 mi SE of Laredo, 12 September 1940 (S. D. Mulaik), one female (AMNH); *Starr County*, Rio Grande City, 4 May 1934 (S. D. Mulaik), one male, one female (AMNH); Rio Grande City, 9 April 1939 (S. D. Mulaik), 1 female (AMNH); Santa Cruz, 21 August 1985 (J. A. Nilsson), one male (JAN), Santa Cruz, 2 March 1986, two females (JAN), Santa Cruz, 8 March 1986, one female (JAN); Dreamland, 19 April 1985 (J. A. Nilsson), one female (JAN); *Hidalgo County*, NW Mission, March 1933 (S. D. Mulaik), one female (AMNH); Edinburg, December 1939 (S. D. Mulaik), one female (AMNH); 5 km N of La Joya, 22 October 1984 (J. A. Nilsson), one female (JAN), 5 km N of La Joya, 8 March 1986. MÉXICO: Tamaulipas; Ciudad Camargo, no date (C. C. Hoffmann), two males (AMNH).

Three specimens obtained from the Naturhistorisches Museum Wien also belong to this taxon. These are labelled "Central America, acquis. no. 1871.IV.I (Schenzer leg.)," one male, two females (NMW). The locality data accompanying these specimens is somewhat problematical, however, it is not uncommon for such old material from this part of the New World to possess erroneous or very general locality data.

ACKNOWLEDGMENTS

We thank Dr. O. F. Francke, who obtained the loan of scorpions that served as the nucleus of this contribution, and Dr. N. I. Platnick of the American Museum of Natural History (AMNH) and Dr. J. Gruber of the Naturhistorisches Museum Wien (NMW), who provided some of the specimens reported on herein. Dr. T. C. Allison of Pan American University is acknowledged for his help to the junior author. Thanks also to Dr. W. D. Sissom and Mr. S. W. Taber for their critical reviews of this manuscript.

LITERATURE CITED

- Ewing, H. E. 1928. The scorpions of the western part of the United States, with notes on those occurring in northern Mexico. *Proc. U.S. Nat. Mus.*, 73:1-24.
- Francke, O. F. 1975. A new species of *Diplocentrus* from New Mexico and Arizona (Scorpionida, Diplocentridae). *J. Arachnol.*, 2:107-118.
- Francke, O. F. 1978. Systematic revision of diplocentrid scorpions (Diplocentridae) from circum-Caribbean lands. *Spec. Publ. Mus., Texas Tech Univ.*, No. 14, 92 pp.
- Gertsch, W. J. 1939. Report on a collection of Arachnida from the Chisos Mountains. *Contrib. Baylor Univ. Mus., Waco, Texas*, 24:17-26.
- Hoffmann, C. C. 1931. Los Escorpiones de México. la Parte: Diplocentridae, Chactidae, Vejovidae. *An. Inst. Biol., México*, 2:291-408.
- Sissom, W. D. 1986. *Diplocentrus colwelli*, a new species of scorpion from northern Mexico (Diplocentridae). *Insecta Mundi*, 1(4):255-258.
- Stahnke, H. L. 1967. *Diplocentrus bigbendensis*, a new species of scorpion. *Entomol. News*, 78:173-179.
- Stahnke, H. L. 1970a. *Diplocentrus spitzeri* sp. n. a new Arizona species of scorpion. *Entomol. News*, 81:25-32.
- Stahnke, H. L. 1970b. Scorpion nomenclature and mensuration. *Entomol. News*, 81:297-316.
- Vachon, M. 1973 (1974). Étude des caractères utilisés pour classer les familles et les genres de scorpions. *Bull. Mus. Nat. Hist. Nat. Paris, ser. 3, No. 140 (Zool. 104)*, pp. 857-958.